State of Maine
River Flow Advisory Commission
Report on Current Hydrologic Conditions
March 27, 2003

Overview:

On March 27, the River Flow Advisory Commission met to follow up on flood potential factors discussed at their March 6 meeting. This report summarizes the information presented on current hydrologic conditions.

Throughout this report, Internet addresses are listed for each category of information. The River Flow Advisory Commission web site provides a portal to all these different sites. That web site address is **www.maine.gov/rfac**. This Internet site will provide a connection to the ever-changing information critical to monitoring flood potential in the state.

At the end of the report, additional sources are provided for further information.

Current Conditions and Flood Potential:

Stream Flow and Headwater Storage Levels:

Stream flows are normal to below normal across the state. However, pre-runoff streamflows are not a significant factor in flood potential.

Reservoirs in the Kennebec and Androscoggin River basins are at below normal levels for the time of year. Levels are kept low at this time of year to "make room" for spring runoff which typically fills the reservoirs to prepare for summer water use. Reservoir and stream flows have generally been low over the past two years, reacting to the below normal precipitation Maine has received since 1999.

Although the spring fill is beginning, it will not be known for a number of weeks whether rainfall and runoff has been sufficient to fill reservoirs to normal spring levels.

For further information on stream flow and reservoir storage:

USGS Water Resources of Maine	**http://me.water.usgs.gov** (Hydrologic Conditions Section)

Ice Conditions:

The potential for ice jamming remains across the state, although this risk is lower in southern and coastal Maine.

An ice jam formed within 10 minutes on Wednesday, March 26 in the Kennebec River at Augusta. Ice monitors placed in river ice by the Cold Regions Research and Engineering Laboratory of the Army Corps of Engineers (CRREL) tripped when the ice began to move, and public safety officials were automatically alerted. USGS hydrologists and officials monitored the ice and took prudent safety measures in response to the situation. Later in the day, a channel developed through the jam and the conditions improved markedly, reducing the immediate risk of flooding.

County emergency managers are networking with local officials to monitor ice conditions on the major rivers, particularly at points which historically have had ice problems. Androscoggin County reports that a potential for ice jamming exists on the Little Androscoggin from Mechanic Falls to Littlefield Corner in Auburn should a significant rainfall event occur.

Ice jams are particularly dangerous because ice jams cannot be forecast. A rapid rise in a river level may indicate that an ice jam has formed downstream. In contrast, a rapid fall in a river level may indicate that an ice jam has formed upstream. If an upstream ice jam breaks up rapidly, flooding of downstream areas can occur quickly.

County and local emergency officials will continue to monitor river ice conditions throughout the spring. The Civil Air patrol has been flying the rivers and photographing ice conditions and will continue to do so as needed.

For more information on ice conditions:

CRREL	**www.crrel.usace.army.mil**
Northeast River Forecast Center	**www.nws.noaa.gov/er/nerfc**
USGS	**me.water.usgs.gov**

Snowpack:

The Maine Cooperative Snow Survey conducts surveys at sites across Maine from January until the snowpack is gone from the headwaters of our major rivers. Cooperators measure snow depth and water content at specific sites. A critical measurement is the "snow water equivalent" which quantifies the amount of water that could potentially run off into the river basins. Snowmelt alone does not generally cause flooding in Maine, but can add to the runoff caused by rainfall.

The statewide survey conducted March 24 and 25 showed water content in the normal range across much of the state, with an area of above normal measurements in northern Aroostook County.

Water content in Maine's river basin ranged from 6 to 9 inches in the St. John, Aroostook and Allagash River basins, 1 to 3 inches Downeast, 4 to 6 inches in the western mountains, and 1 to 4 in southern sections.

Contributors to the Maine Cooperative Snow Survey include Federal and State agencies, hydroelectric power and paper companies and Canadian and New Hampshire environmental agencies.

For more information on snow survey data, updated with every survey through the spring:

Maine Cooperative Snow Survey	**www.maine.gov/mema/weather/snow.htm**

Weather Outlook:

The outlook for the next 6 to 10 days shows a tendency to above normal precipitation in northern Maine, and closer to normal precipitation in the south. After a warm-up for the coming weekend, temperatures will again turn colder. Some precipitation received in the north may come in the form of snow.

Flood Potential:

The most important single factor in determining the severity of flooding is rainfall, how much and in how short a period of time. Major flooding on Maine rivers does not generally occur from snowmelt alone. However, ice jam flooding is a concern as long as large amounts of ice remain in Maine's rivers. Ice jam flooding cannot be forecast. Local observation is critical as ice begins to break up and move. Ice jams can cause sudden flooding above the jam, as the water backs up, and below the jam if it breaks and releases a large amount of water.

The National Weather Service Forecast Offices in Caribou and Gray will issue Flood Potential Statements every two weeks throughout the spring. Their last reports were issued on March 21; the next are scheduled for Friday, April 4, or will be issued sooner if conditions warrant. These reports examine all current hydrologic factors and give an overall assessment of flood potential.

For more information on flood potential and for flood watches and warning should they arise:

NWS Gray	**www.nws.noaa.gov/er/gyx/hydrology.htm**
NWS Caribou	**www.nws.noaa.gov/er/car/hydro.htm**
NWS Flood Forecasts/MEMA site	**www.maine.gov/mema/weather/flood.htm**

Drought Conditions:

Ground-water levels continue low, showing the effects of several years of below-normal precipitation. At some sites, levels are lower than at this time last year.

It was noted that although Maine residents generally feel that this has been a harsh winter, in reality snowfall levels have actually been below normal at most sites. The cold temperatures, and the lack of a "January thaw" has caused snow cover and snow banks to remain intact until recently, making it seem as if Maine received more snow that it actually did.

The National Weather Service considers meteorological drought conditions to exist when precipitation levels are at 85% of normal. For many sites, especially across western Maine, precipitation is between 80% and 83% of normal for the last year.

According to the State Climatologist, the northern half of the state and western mountains are under moderate drought conditions. The rest of the state, except for Down East and the immediate coastal sections of the Mid-Coast, is under abnormally dry conditions. Down East and Mid-Coast are normal, but on the dry side of normal.

Conditions may be ameliorated during the spring if the spring melt is slow, allowing for ground water recharge and if adequate rainfall is received. Paradoxically, if rainfall comes too rapidly and forces runoff of rain and melting snow, less groundwater recharge may occur, and flooding could occur.

Weather/climate sites:

http://www.nws.noaa.gov/er/gyx
http://www.nws.noaa.gov/er/car
http://maine.gov/mema/weather/genweath.htm
http://www.drought.unl.edu/dm/monitor.html

*Background information***:**

http://www.umaine.edu/maineclimate
http://www.ncdc.noaa.gov/ol/climate/research/prelim/US/US_prelim.html
http://lwf.ncdc.noaa.gov/oa/climate/research/prelim/drought/spi.html
http://lwf.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/palmer_drought/

http://enso.unl.edu/ndmc/enigma/indices.htm#palmer

Preparedness and Mitigation:

Flood Insurance and Floodplain Management:

The State Floodplain Management Program reiterates that property owners and renters should consider the purchase of flood insurance. Unfortunately, many individuals think that their homeowner's or business owner's insurance policy will cover any losses. These insurance policies do NOT cover damages from flooding. Flood Insurance must be purchased separately. **There is a 30-day waiting period** before the policy goes into effect. It is estimated that only 21% of those structures in the floodplain in Maine are covered by flood insurance."

The State's Floodplain Management Program strongly recommends that all individuals and business owners check with their insurance agents and determine if their flood insurance coverage is adequate.

According to the most recent National Flood Insurance Program Insurance Report for January 2003, there are 6,915 flood insurance policies in effect in Maine with a total coverage of $922,488,700. This includes all flood policies for residential and non-residential structures and/or contents. The average coverage per policy in Maine is $133,500 and the average annual premium is $571. Since 1978, $26,139,341 has been paid out in flood insurance claims in the State of Maine.

The State Planning Office and the Maine Emergency Management Agency, in partnership with the Federal Emergency Management Agency (FEMA) have ongoing programs stressing "mitigation", or the reduction of risk from disasters. Flood mitigation can be as simple as moving perishable items out of a basement, elevating a furnace or improving drainage for a road that always floods. It can be as far-reaching as moving entire neighborhoods out of the floodplain.

Flooding is Maine's most costly hazard, affecting some community in the state every year, sometimes with disastrous results. Mitigation measures can not only save repair dollars in the long term, but may even make a community more attractive to development and business investment.

For more information on floodplain management and mitigation:

State Planning Office, Floodplain Management Program	**http://www.maine.gov/spo/flood/**

Preparedness and Safety:

Preparedness is key to minimizing the impact of flooding or any emergency. Individuals and families, businesses, schools and communities benefit from reviewing their vulnerability to flooding and ensuring that they have workable plans for dealing with the event. Everyone should stay aware of National Weather Service forecasts as the spring progresses, and talk to local officials and County Emergency Management Agencies if they have questions about flood preparedness in their communities, or how to build an emergency plan for family, business or school.

It is also critical during a flood event that all citizens heed all official warnings. In particular, the Maine Department of Transportation stresses that during a flood no one should drive on submerged roads, as the stability of the road may have been severely damaged by flood waters. Highway crews will place signs and barricades to warn of flooded sections of road. Motorists who ignore these warnings and drive through flooded areas are gambling with their

own safety and that of their passengers. Motorists should always seek an alternate route around flooded areas and avoid taking unnecessary chances by driving through flooded areas. A flooded road may be damaged to the point that it will not support a vehicle.

According to the National Weather Service, even 6 inches of fast-moving flood water can knock you off your feet, and a depth of two feet will float your car. In the southern Maine flood of October, 1996, a life was lost as a result of a vehicle being trapped in flood water.

As ice in Maine's river begins to weaken and move, it is also critical to **stay off the ice.** Although ice may appear to be as solid as it was in the middle of the winter, increased spring stream flows erode the ice, and warmer temperatures soften it.

For more information on flood preparedness and safety:

MEMA Flood Preparedness Page	**www.maine.gov/mema** (follow link to River Watch)
NWS Caribou	**www.nws.noaa.gov/er/car/hydro.htm**
NWS Gray	**www.nws.noaa.gov/er/gyx**
County Emergency Management Agencies	**www.maine.gov/mema/county.htm**

Important Factors for Springtime Floods (in order of relative importance):

1) RAINFALL: This is the most important factor in determining the magnitude of significant floods in Maine. If precipitation during April and May are normal and evenly distributed, then streamflow will be in the normal range. However, if significant rainfall occurs over a short period of time, flooding could result.
2) SNOW COVER: This is a secondary factor and can add to rainfall events. As the snow pack becomes more "ripe" (nearly saturated), it can melt quickly and significantly add to a flood peak. The most accurate measurement of snow cover is "snow water equivalent". Snow water equivalent is the amount of liquid water contained in the snow. Snowmelt alone should not produce major floods.
3) RIVER ICE: Ice jams can cause increased damage by temporarily blocking rivers and streams and causing higher water levels behind the jam. Peak flows downstream increase when jams break up and quickly release stored water.
4) TEMPERATURE: Warm days with freezing night temperatures allow a gradual melting and runoff of the snowpack. A sudden warm up, especially when coupled with significant rainfall, can send large amounts of runoff into rivers and streams.
5) RESERVOIR STORAGE: Maine's headwater storage reservoirs typically reach their annual low water levels in March. These reservoirs can moderate downstream flood peaks if rainfall occurs above the storage dams while the reservoir's water levels are down. The reservoir systems have limited ability to moderate flood peaks in the lower parts of the river basins if large amounts of rain fall or if heavy rains fall downstream of the storage dams.

Conclusion:

The River Flow Advisory Commission found that as of March 27, flood potential in the state was normal, with the exception of the possible risk posed by the ice remaining in Maine's rivers, especially in northern sections. The current conditions information in this report represents a "snapshot" of conditions throughout the state as of March 27, 2003. However, many new factors will influence the flood potential in Maine as the spring progresses.

National Weather Service and emergency management reports should be watched throughout the spring, and local officials should monitor the flood-prone areas for each community. In particular, rivers should be monitored closely as ice begins to break up and move, as ice-jam

related flooding can arise quickly and have locally devastating impact. Property owners, business owners and renters in flood-prone areas should check their insurance coverage to be sure that they are protected against flooding damages.

The Commission has not set a date for an additional meeting this spring, but will continue to exchange information and will meet again if conditions warrant.

The Maine River Flow Advisory Commission is composed of representatives from major river basin management operations, state agencies, federal agencies and the University of Maine. The Commission was originally formed after the spring floods of 1983 to improve the exchange of hydrologic information collected by the members, to review the data, and to provide information to emergency action agencies and the public. It was created in statute by the Legislature in 1997.

Information Resources:

For additional information on particular aspects of this report, please contact:

Art Cleaves, Maine Emergency Management Agency	Flood preparedness and mitigation	207-626-4503
Bob Lent, U.S. Geological Survey	Stream flow, ice conditions, snow survey	207-622-8202
Tom Hawley, National Weather Service, Gray, Maine	Flood potential for central and southern Maine; flood forecasting	207-688-3216
Hendricus Lulofs, National Weather Service, Caribou, Maine	Flood potential for northern and eastern Maine; flood forecasting	207-496-8931
Marc Loiselle, Maine Department of Conservation	Snow survey	207-287-2801
Lou Sidell, State Planning Office, Floodplain Management Program	Floodplain management, flood insurance and mitigation	207-287-8063
Dana Murch, Department of Environmental Protection	Reservoir storage and regulated river flows	207-287-7784
Greg Zielinski, State Climatologist	Drought conditions and climate information	207-581-3441

Links to further information on all sections of the report, updated as conditions change:

www.maine.gov/rfac

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